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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,037	11/17/2003	Nicholas John Doran	BTGI-004/02US 020038-2016	1140
22903 7590 10/17/2007 COOLEY GODWARD KRONISH LLP ATTN: PATENT GROUP Suite 1100 777 - 6th Street, NW WASHINGTON, DC 20001			EXAMINER PASCAL, LESLIE C	
			ART UNIT 2613	PAPER NUMBER
			MAIL DATE 10/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/713,037	Applicant(s) DORAN ET AL.	
	Examiner Leslie Pascal	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the SSMF fiber and DCF fibers of claims 7 and 22; prechirping of claims 16 and 31; must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. Claims 1-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not teach that the sections are mutually exclusive from each other (last two lines of the independent claims). It is not clear what the applicant means by this. Does it mean that they have different values than each other? Does it mean that they are physically separated from each other?

It is also unclear from the specification what the applicant means by "normal average dispersion". Although the specification talks about this with regard to figures 5, it only shows NET dispersion. It would appear from figure 7 that the applicant means that it is negative average dispersion-but the examiner is not sure.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is meant by the sections are mutually exclusive from each other (last two lines of the independent claims). It is not clear what the applicant means by this. Does it mean that they have different values than each other? Does it mean that they are physically separated from each other?

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 6-9, 12, 13, 15, 18, 21-24, 27, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula et al. (US Patent No. 5,887,105).

Regarding claims 1 and 2, Bhagavatula teaches a method of communicating using optical pulses comprising: launching the optical pulses into an optical fiber communication system including a plurality of sections having dispersion of opposite sign (see fig. 1 – note that each dispersion value D per unit length alternates in positive or negative dispersion values; see also e.g., col. 7, lines 27-32). It is obvious that the pulses being launched at a wavelength at which the system has normal average dispersion (see col. 3, lines 16-20: the “near zero” dispersion is understood as “normal average” dispersion). See column 2, lines 51-55, “The length weighted **average** of total dispersion is chosen to be less than a pre-selected value over a range of wavelengths which correspond to the operating wavelengths of the optical telecommunications system.” In that he teaches that the average compensation IS LESS THAN A predetermined amount based on the wavelength used, it would have been obvious to have the normal average dispersion as negative (see the above 112 rejections). It would appear that the pulse would obviously be provided in a wavelength that is in the normal average dispersion range in order to provide less noise. There are no amplifiers being disposed between a first pair of adjacent sections from the plurality of sections and a second pair of adjacent sections from the plurality of sections (no amplifiers are disposed between the pairs), the first pair of adjacent sections being mutually exclusive from the second pair of adjacent sections (the sections are mutually exclusive – i.e., they do not overlap). See the above 112, first and second rejections.

Regarding claims 3 and 18, Bhagavatula teaches a method of communication using optical pulses, the method comprising: transmitting the optical pulses over a dispersion-managed optical fiber communication system including a first section having a dispersion, a second section having a dispersion of opposite sign from the dispersion

of the first section, a third section having a dispersion and a fourth section having a dispersion of opposite sign from the dispersion of the third section (see fig. 1 – note that each dispersion value D per unit length alternates in positive or negative dispersion; see also e.g., col. 7, lines 27-32), the second section being disposed between the first section and the third section without an intervening amplifier (no amplifier is disposed between the first and third section), at least some pulses being transmitted at a wavelength at which the system exhibits normal average dispersion (see col. 3, lines 16-20: the “near zero” dispersion is understood as “normal average” dispersion), the first pair of adjacent sections being mutually exclusive from the second pair of adjacent sections (the sections are mutually exclusive – i.e., they do not overlap).

Regarding claims 6 and 21, Bhagavatula teaches that the communication system is dispersion managed using sections of fiber having anomalous dispersion (see e.g., anomalous section 4 of fig. 1).

Regarding claims 7 and 22, Bhagavatula teaches that the communication system is dispersion managed using sections of SSMF fiber and section of DCF fiber (see col. 1, lines 53-55 and col. 7, lines 11-12).

Regarding claims 8 and 23, Bhagavatula teaches that the communication system is dispersion managed using alternative sections of fiber having opposite signs of dispersion (see fig. 1).

Regarding claims 9 and 24, Bhagavatula teaches that the communication system is managed using dispersion compensating elements (see col. 1, lines 53-55).

Regarding claims 12 and 27, Bhagavatula teaches that the communication system is managed using linear elements (see col. 1, lines 53-55: the DCF is a linear element).

Regarding claims 13 and 28, Bhagavatula teaches that the communication system is a WDM system (col. 4, line 63).

Regarding claims 15 and 30, Bhagavatula teaches that the communication system has an asymmetric dispersion map (see fig. 2).

8. Claims 4, 14, 17, 19, 29, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula in view of Golovchenko et al. (US Patent No. 6,243,181 B1).

Regarding claims 4, 14, 19, and 29, Bhagavatula teaches the limitations of claims 3 and 18 but does not expressly disclose that the system is soliton-based. However, soliton-based communication systems are notoriously well known in the art. For example, Golovchenko from a similar field of endeavor, teaches a method of communicating using optical pulses comprising launching the optical pulses into an optical fiber communication system including a plurality of sections having dispersion of opposite sign (see fig. 2), wherein the system is soliton-based (see Abstract). It would have been obvious to a skilled artisan at the time of invention to incorporate soliton functionality in the system of Bhagavatula in order to improve system performance.

Regarding claims 17 and 32, Bhagavatula teaches the limitations of claims 3 and 18 but does not expressly state that the communication system launches the pulses with a pulse shape determined according to a dispersion map of the communication system. However, a skilled

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artisan would have clearly recognized that pulses need to be shaped according to specific attributes of the system in order to sufficiently allow for communication. Furthermore, Golovchenko from a similar field of endeavor, teaches a system wherein the pulses are launched with a pulse shape determined according to a dispersion map of the communication system (see Abstract; see also col. 5, lines 1-10, lines 46-65, and col. 6, lines 3-5: note that the pulse shape is normalized to the intensity of an average soliton in the transmission line). If not inherent, it would have been obvious to a skilled artisan at the time of invention to launch pulses with a pulse shape determined according to a dispersion map in order to allow for proper and effective communication.

9. Claims 5 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula in view of Suzuki et al. (US Patent No. 6,005,702).

Regarding claims 5 and 20, Bhagavatula teaches all the limitations as applied to claims 3 and 18, but does not expressly disclose that the pulses are RZ phase modulated. Suzuki teaches that a system wherein the pulses are phase modulated return-to-zero when launched (fig. 6, 31A and 33A). It would have been obvious to a skilled artisan at the time of invention to phase modulate the pulses as indicated by Suzuki in the system of Bhagavatula in order to increase transmission performance and offset the deleterious effects from nonlinearities in the fiber transmission line.

10. Claims 10, 11, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula in view of Kewitsch et al (5805751).

Regarding claims 10, 11, 25, and 26, Bhagavatula teaches limitations as applied to claim 3 above except for the limitation that the communication system uses

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circulators and is dispersion managed using optical gratings. See column 2, lines 1-8 and column 14, lines 49-57 of Kewitsch et al (5805751). One of ordinary skill in the art at the time of invention would have been motivated to use an optical grating and an optical circulator in the system of Bhagavatula to compensate for nonlinear effects and to achieve higher quality compressed pulses. Furthermore, it is well known that optical circulators and gratings provide increased system versatility for directing and administering signals. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include a grating and a circulator in the system of Bhagavatula. It would have been obvious to compensate with a desired amount in order to provide the required overall compensation.

11. Claims 16 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhagavatula in view of Ishikawa et al. (US Patent No. 5,717,510).

Regarding claims 16 and 31, Bhagavatula teaches all the limitations as applied to claims 3 and 18 except for the limitation that the pulses are prechirped. Ishikawa discloses prechirping pulses (col. 18, lines 18-23). One of ordinary skill in the art would have been motivated to prechirp the pulses in order to elongate signal duration, to improve communication quality, and to improve the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to prechirp the pulses as indicated by Ishikawa in the system of Bhagavatula.

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

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from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 1-32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 18-32 of U.S. Patent No. 6738542.

Although the conflicting claims are not identical, they are not patentably distinct from each other because The method of launching a signal would be facilitated by the means of claim 18 of the patent. Although he does not specify in the claim that there is no amplifier, when using the specification as a dictionary – it is clear that there is no amplifier. In regard to the soliton, he teaches a soliton in claim 18. In that the applicant teaches that either a soliton or a phase modulated NRZ signal can be used (ie the applicant does not even teach or show the NRZ signal...the applicant teaches that it is not critical), it would have been obvious to use either a NRZ signal or a soliton. In regard to claims 7, see claim 19. In regard to claims 10-11 and, see claim 21. In that the patent uses the same dispersion maps as the applicant, it is obvious that the patent used the asymmetrical dispersion maps for component selection. In regard to prechirping, one of ordinary skill in the art would have been motivated to prechirp the pulses in order to elongate signal duration, to improve communication quality, and to

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improve the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to prechirp the pulses.

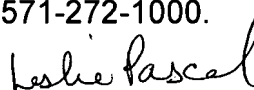
14. In regard to the applicants' arguments with regard to Bhagavatula, the applicants' arguments are not persuasive. The applicant argues that Bhagavatula's range may have complete or partial cancellation of positive by negative dispersion and this cannot provide normal dispersion.). See column 2, lines 51-55, "The length weighted **average** of total dispersion is chosen to be less than a pre-selected value over a range of wavelengths which correspond to the operating wavelengths of the optical telecommunications system." It would have been obvious to select the average dispersion to be normal if this provided the required results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Pascal whose telephone number is 571-272-3032. The examiner can normally be reached on Mondays from 6:30- 3 and Fridays from 6:30-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



/Leslie Pascal/
Primary Examiner
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